

US EPA ARCHIVE DOCUMENT

LOW IMPACT DEVELOPMENT STORMWATER BEST MANAGEMENT PRACTICES AT BROWNFIELD SITES

EPA New England Brownfields
All-Grantees Meeting
August 10, 2005

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Chairman, Low Impact Development Center
GeoSyntec Consultants, Inc. Acton, MA



GEOSYNTEC CONSULTANTS

Primary Goal of LID

Design each development site to protect, or restore, the natural hydrology of the site so that the overall integrity of the watershed is protected. This is done by creating a “hydrologically” functional landscape.

Watersheds:

- ◆ A watershed is the area that surrounds the lake/river and supplies the lake with water
- ◆ Geology, size and land uses determine the type of water that is supplied to the lake/river.



NPDES Stormwater Phase II

Six Minimum Control Measures

- ◆ Public Education and Outreach on Stormwater Impacts
- ◆ Public Involvement/Participation
- ◆ Illicit Discharge Detection and Elimination
- ◆ Construction Site Stormwater Runoff Control
- ◆ Post-Construction Stormwater Management in new Development and Redevelopment
- ◆ Pollution Prevention/Good Housekeeping for Municipal Operations

Stormwater BMPs

◆ Structural

- Bioretention
- Raingardens
- Pavers/Porous Surfaces
- Greenroofs
- Swales

◆ Non-Structural

- Public Education
- Good Housekeeping
- Ordinances/Bylaws
- Maintenance
- Proper control of chemical use/IPM
- Design Changes

What's in Stormwater and How Does it Make its Way to Reservoirs and Wells?



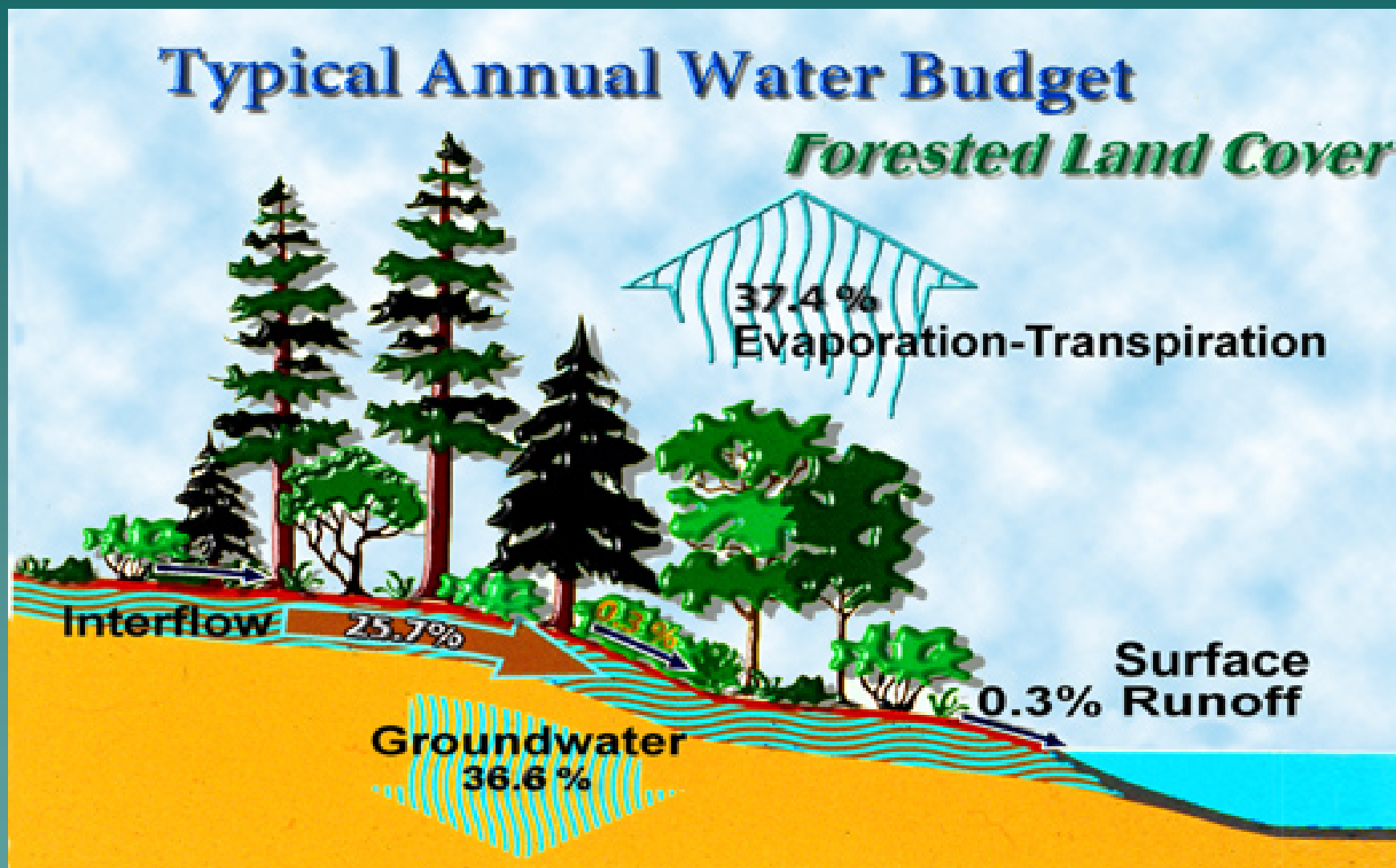
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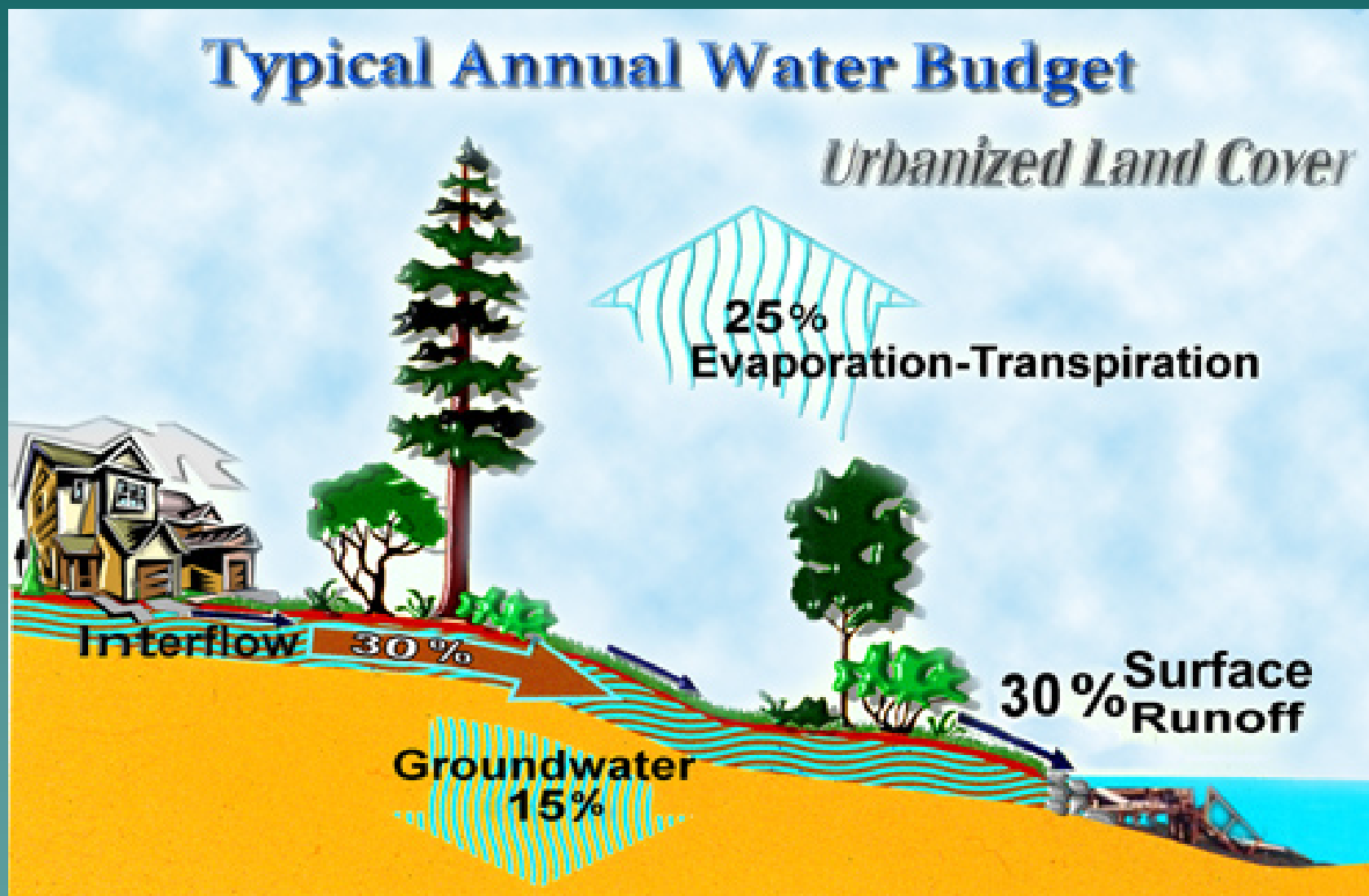


Natural Conditions



Courtesy May, U of W

Developed Conditions



Courtesy May, U of W

EXHIBIT III
CONVENTIONAL DEVELOPMENT
PATUXENT RIDING

9/17/97 SCALE: 1"=60'



ENGINEERING & SURVEYING, INC.
10000 PATUXENT ROAD, SUITE 100, P.O. BOX 1000
POTOMAC, MD 20854-1000
(301) 948-1000 FAX (301) 948-1001

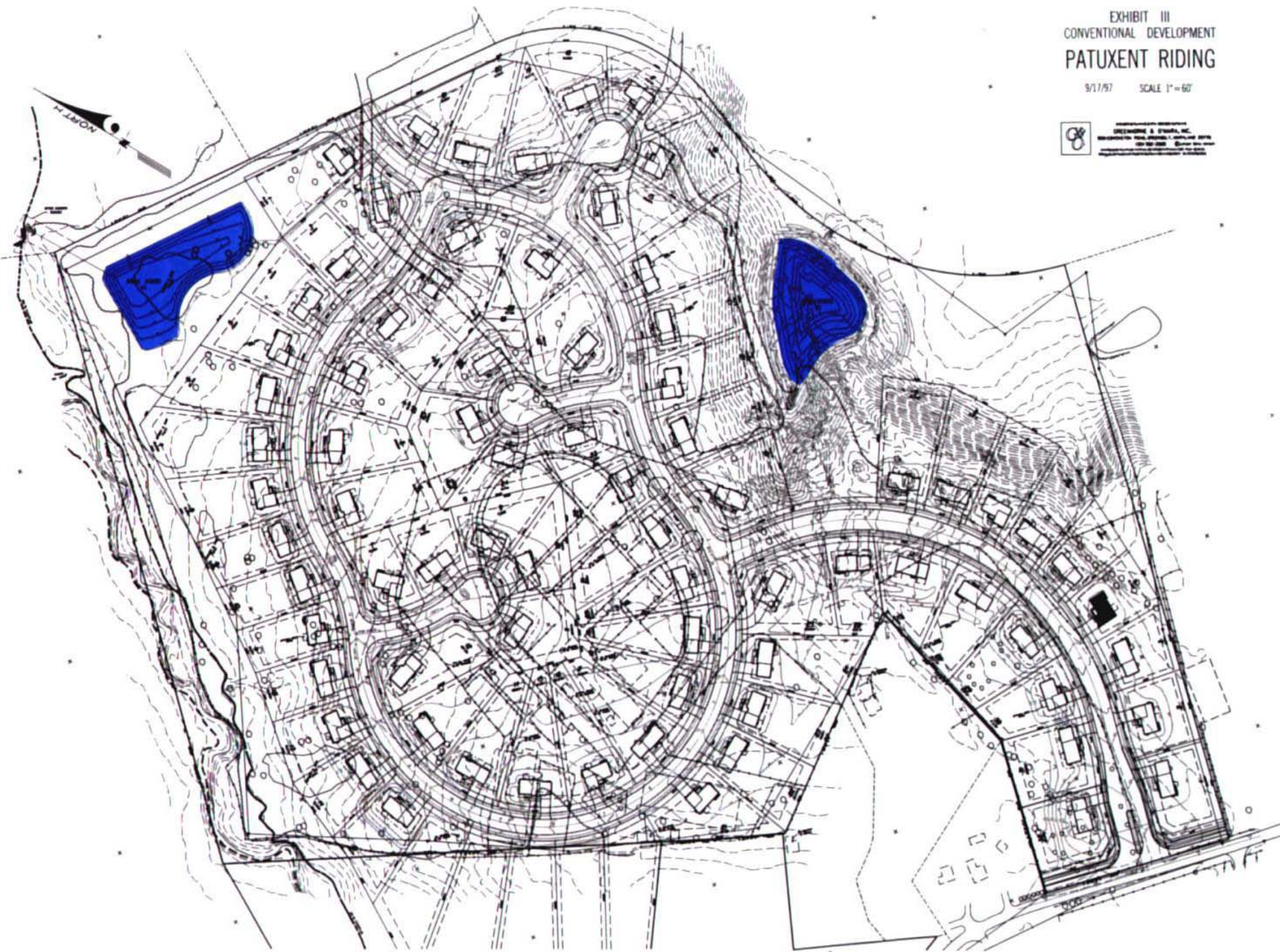
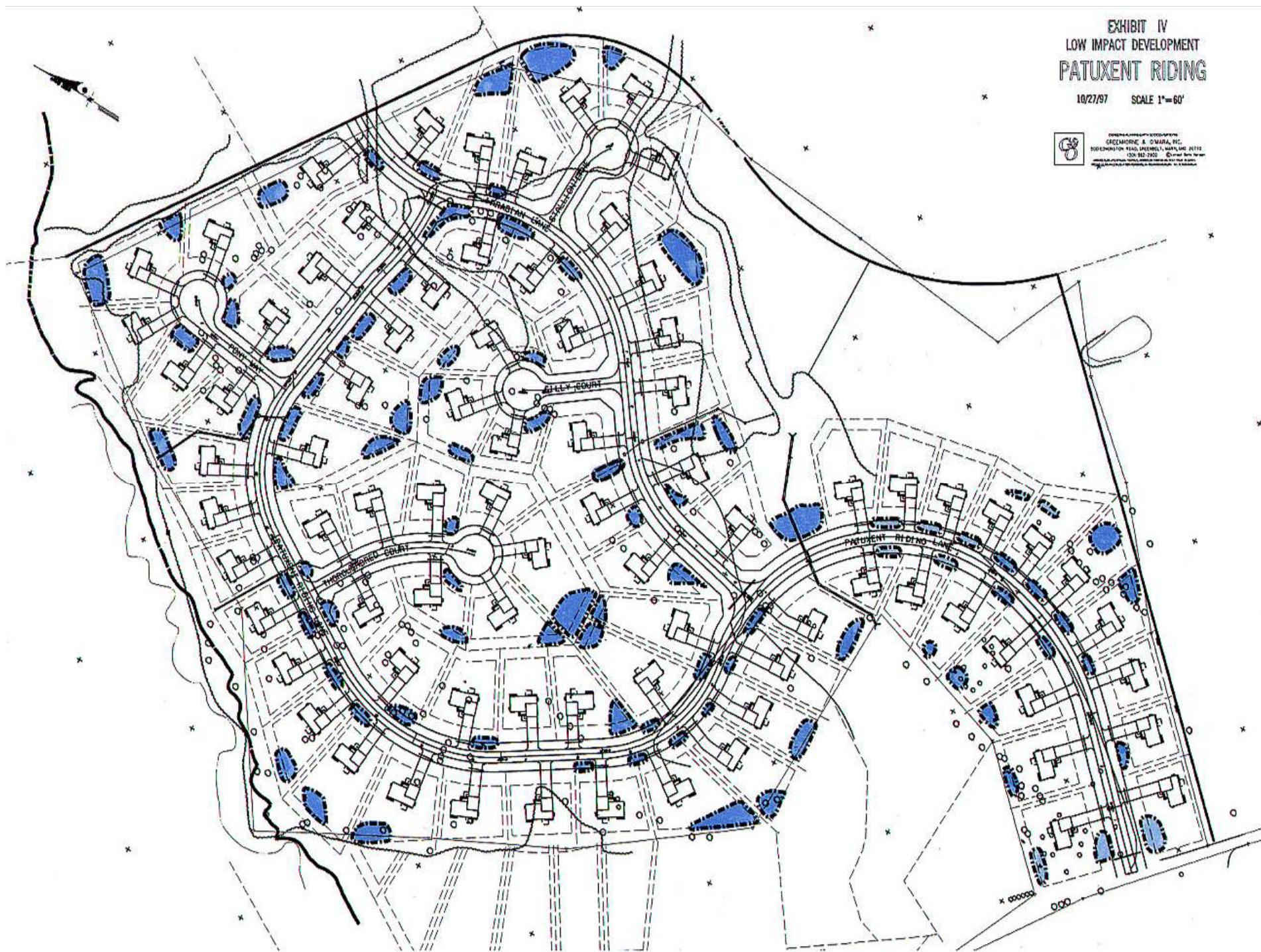


EXHIBIT IV
LOW IMPACT DEVELOPMENT
PATUXENT RIDING

10/27/97 SCALE 1"=60'



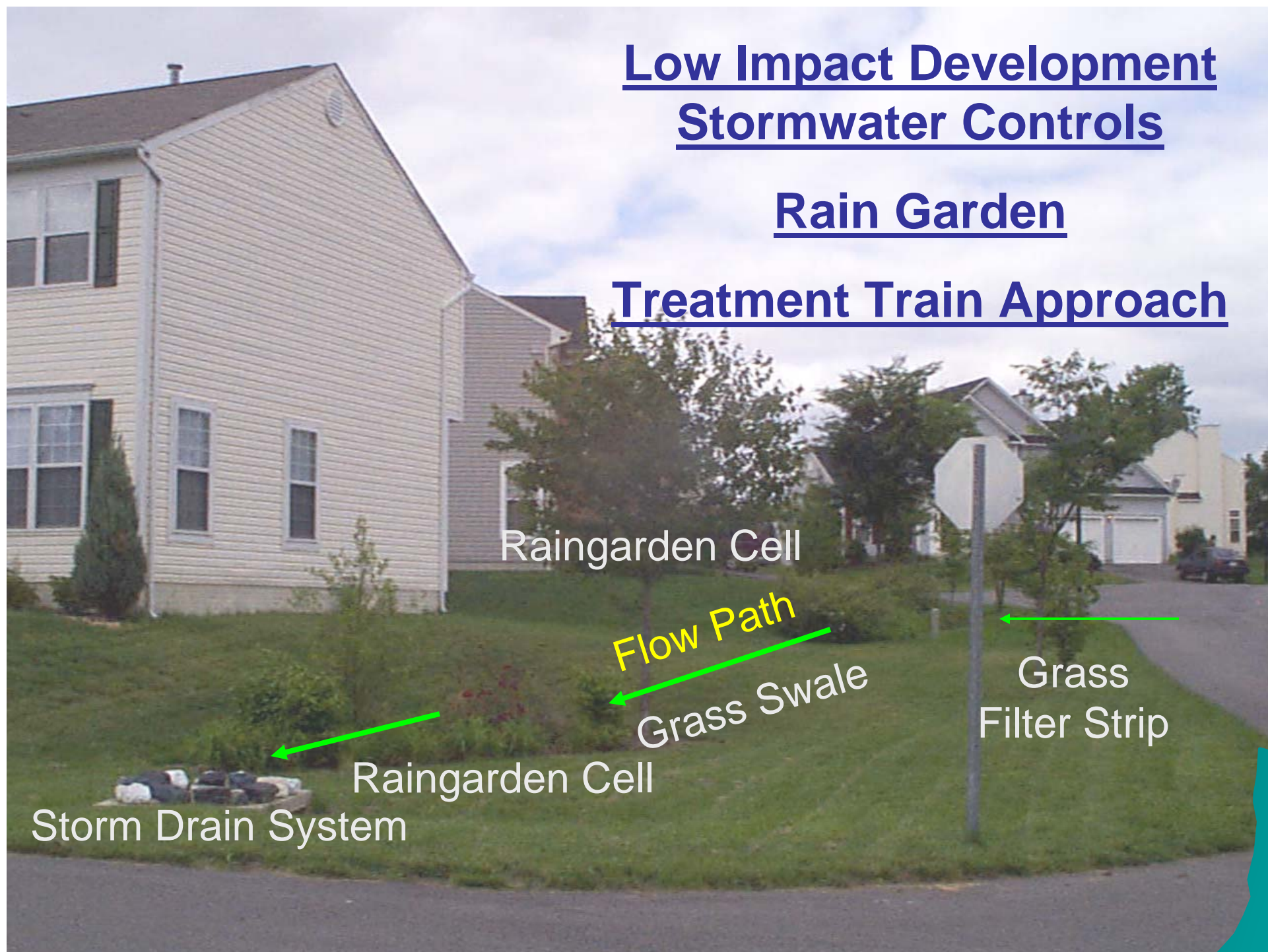
GREENMORE & SHARR, INC.
500 ELMHURST ROAD, GREENBELT, MARYLAND 20740
(301) 947-1900



Low Impact Development Stormwater Controls

Rain Garden

Treatment Train Approach



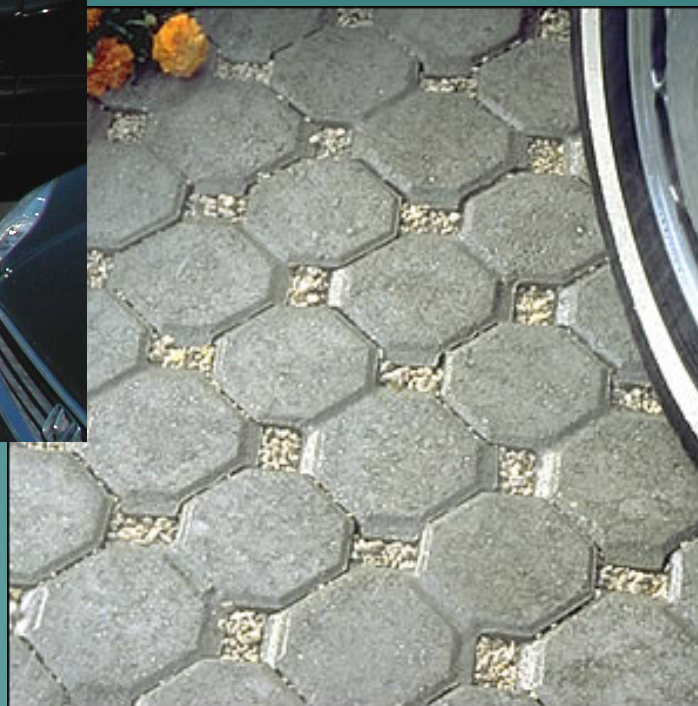




Parking Lot Improvements



UNI-Eco Stone™ Porous Pavers



Parking Lot Improvements



Porous Asphalt



Pictures and video taken
from www.thcahill.com



Rain Garden (in use) in a highly landscaped commercial site.



Rain Gardens located in the parking lot medians, note the curb slots to permit surface flow to enter.



Residential Street Reconstruction - Seattle

Street Edge Alternatives (SEA)

Functional
Landscape and

Reduced
Impervious Area

98% Stormwater
volume reduction
for 2 yr storm
event



SEA Streets - After Construction
2nd Ave NW - NW 117th St to NW 120th St

“SEA” Street



elements



Green Roofs



Urban Bacteria Management Issues:

◆ Bacteria/Pathogens: Pets



Urban Bacteria Management Issues:

- ◆ Bacteria/Pathogens:
Public
Education/Outreach
Materials

Why is the Beach Closed Today?

Understanding Bacteria in Our
Swimming Beaches



department of
Conservation and Recreation

dcr



LID Web Resources

- ◆ The Low Impact Development Center
 - ◆ www.lowimpactdevelopment.org
- ◆ Stormwater Research Center
 - ◆ www.lid-stormwater.net
- ◆ Massachusetts LID Website
 - ◆ www.mass.gov/envir/lid/default.htm

Questions...

